

DER Technologies: Renewables



Kurt Creamer, PE

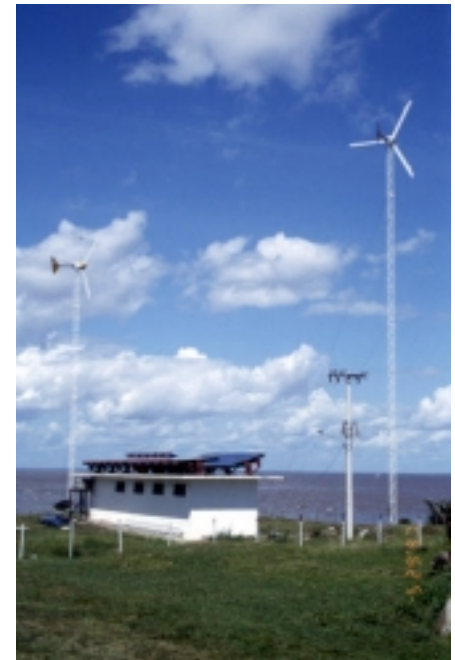
NCSU Solar Center

Presented at DER for Federal Facilities

Atlanta, Georgia, May 23-24, 2002

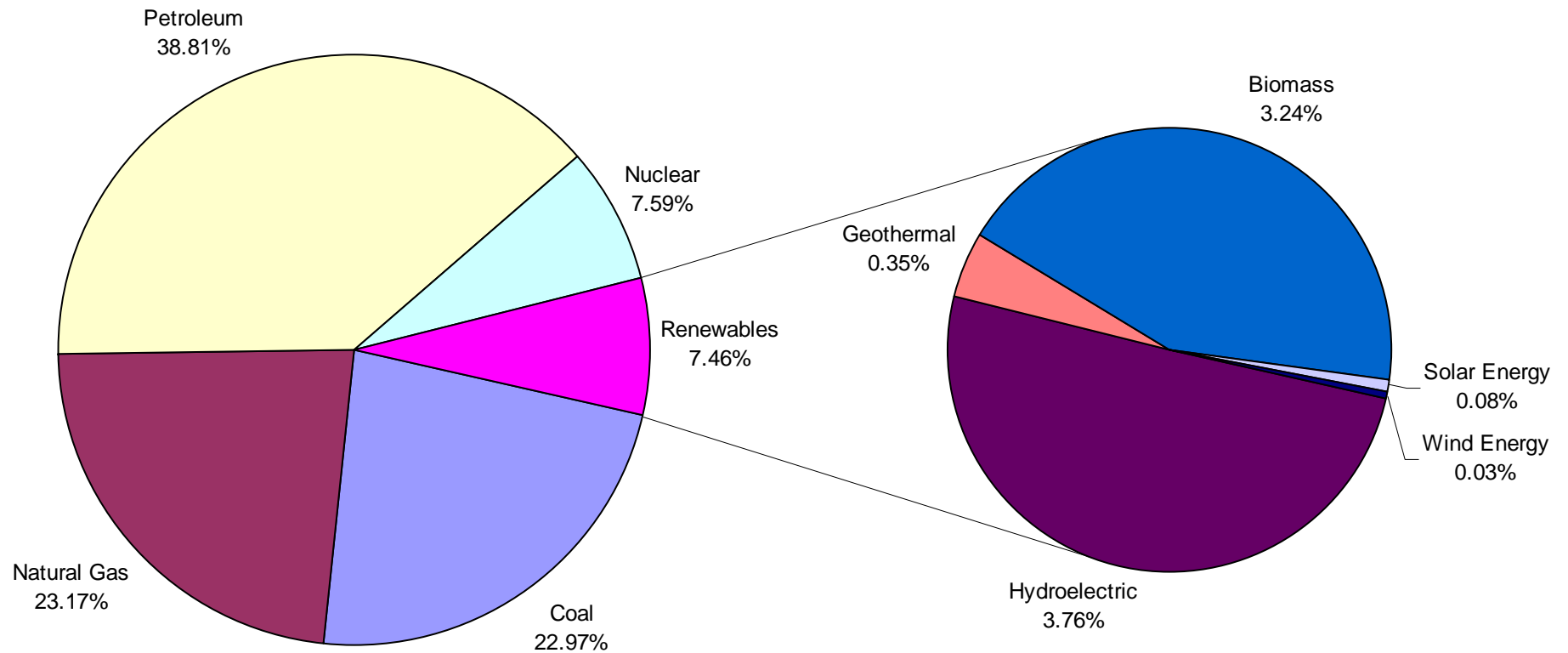
Renewable Energy Technologies for Distributed Energy Resources

- Solar
 - Thermal
 - PV
- Biomass
 - Landfill Gas
 - Wood
 - Anaerobic Digestion
- Wind



US Energy Consumption by Energy Source (1998)

■ Coal ■ Natural Gas ■ Petroleum ■ Nuclear ■ Hydroelectric ■ Geothermal ■ Biomass ■ Solar Energy ■ Wind Energy



Projected Non-Hydro Electric Generation

Figure 60. Projected nonhydroelectric renewable electricity generation by energy source, 2010 and 2020 (billion kilowatthours)

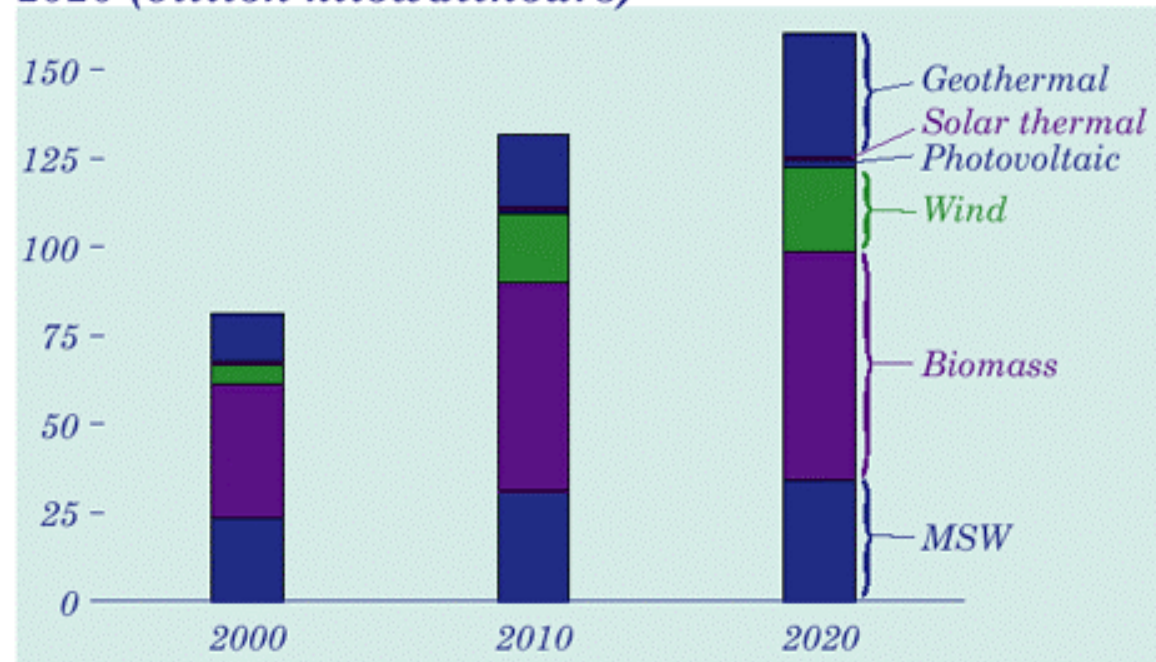
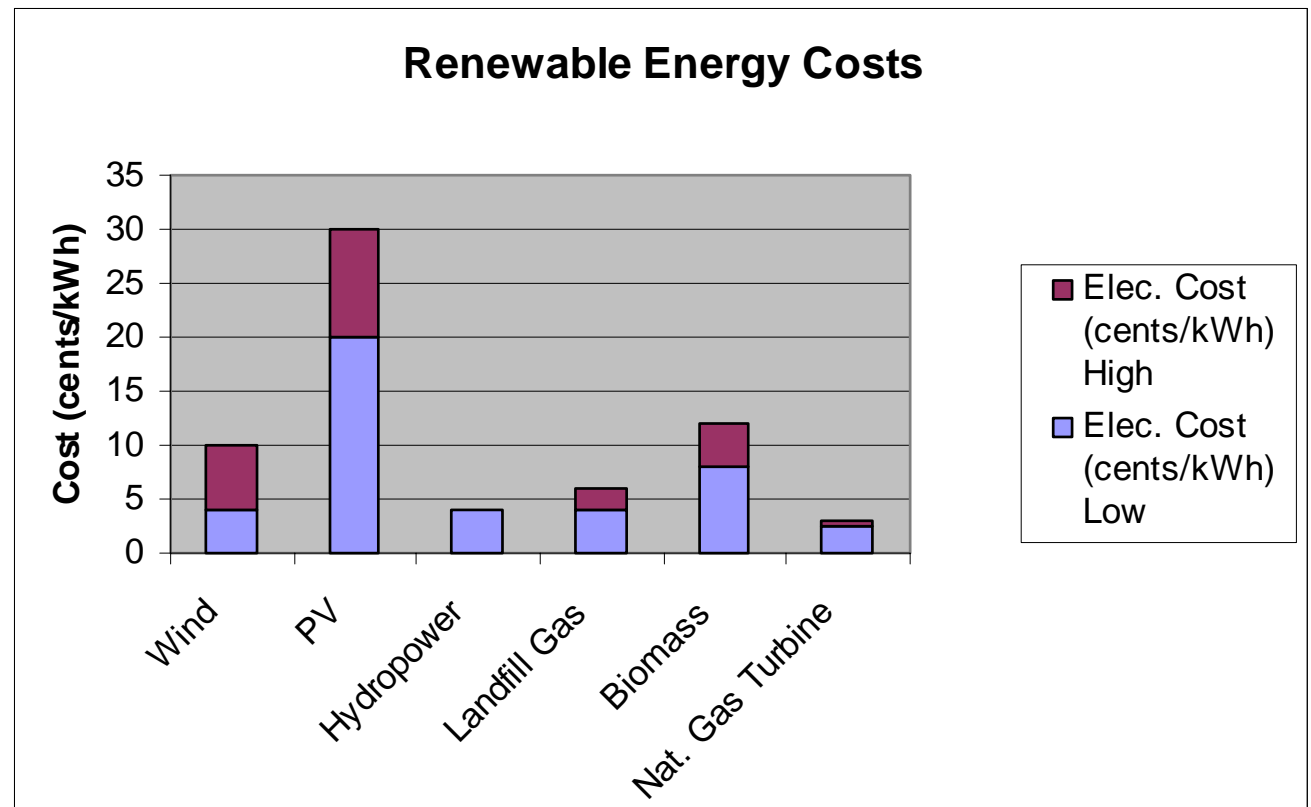


Table A17.

Criteria for DER

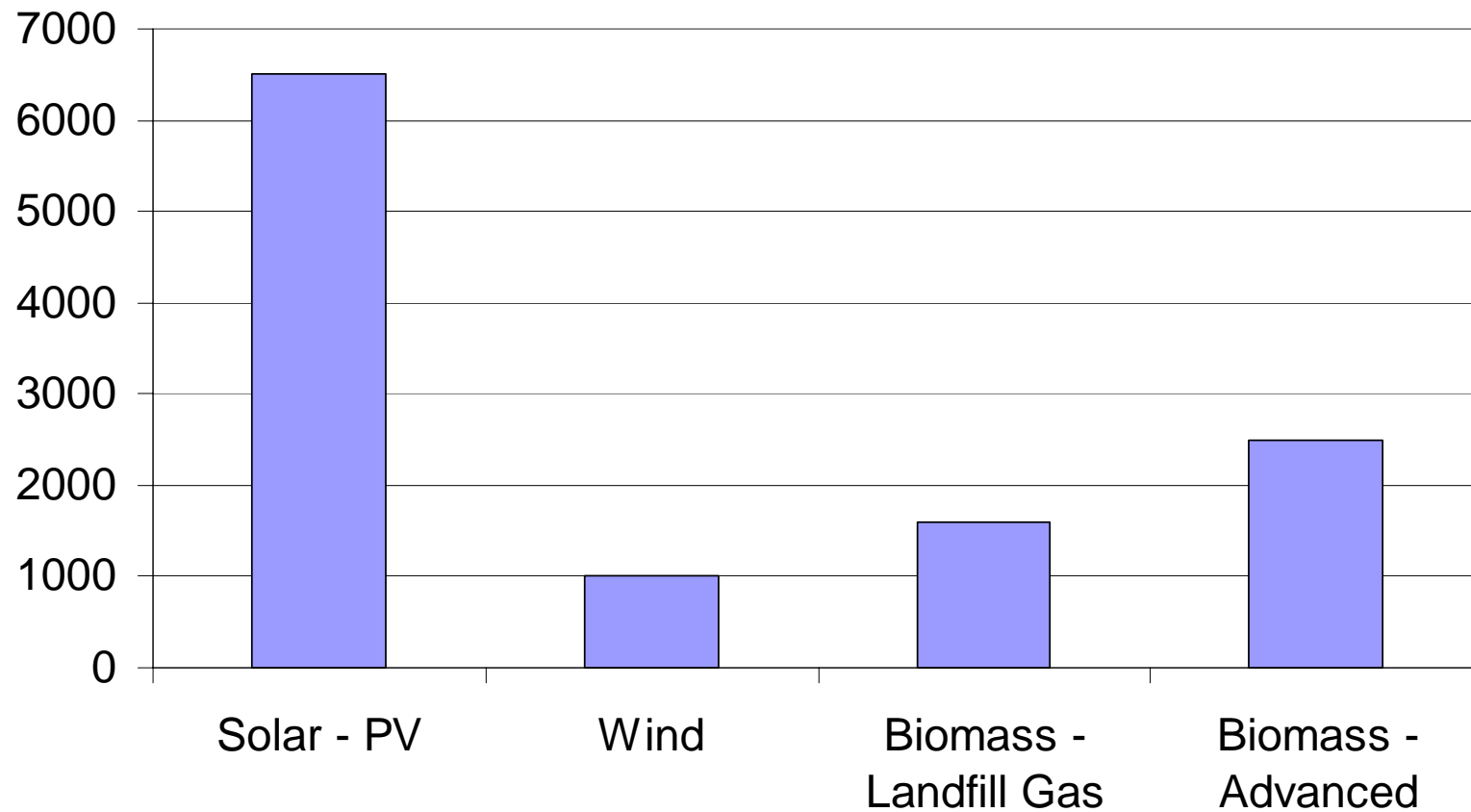
- Environmental Benefit
- Reliability
- Energy Security
- Power Quality
- Demand Response
- Load Matching, Peak Shaving

Comparison of Renewable Energy Costs



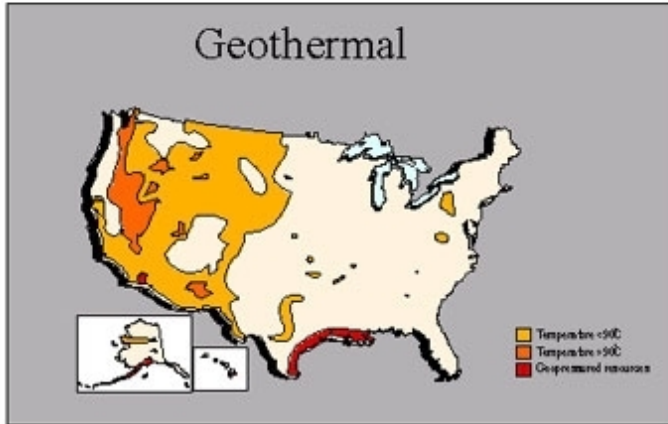
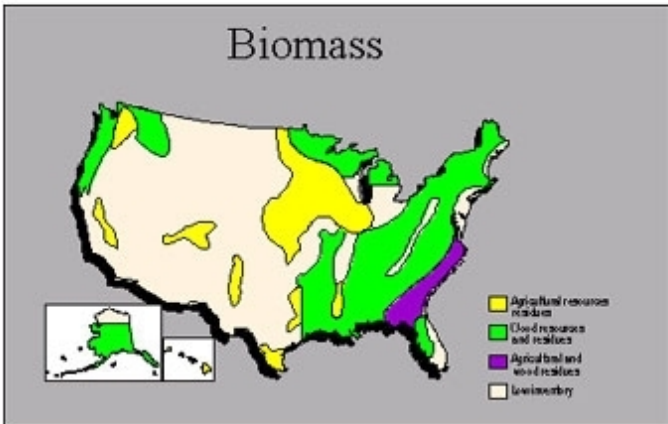
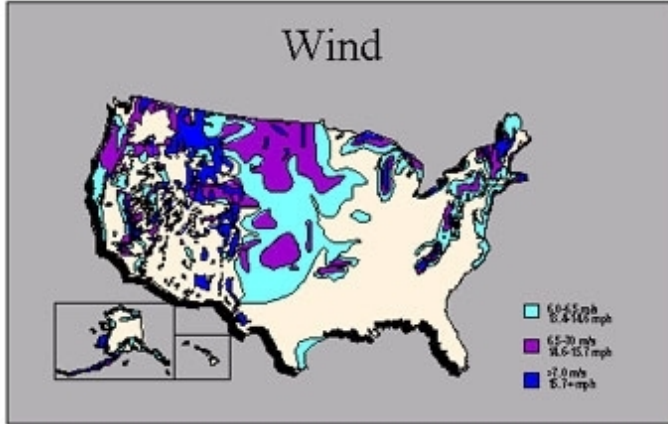
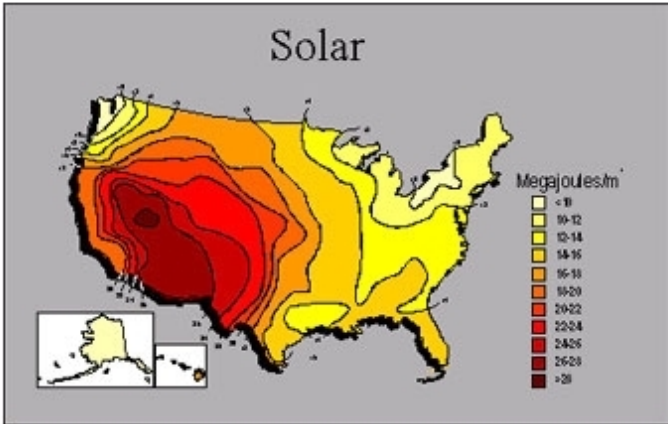
System Cost for Renewables

System Cost, \$/kW

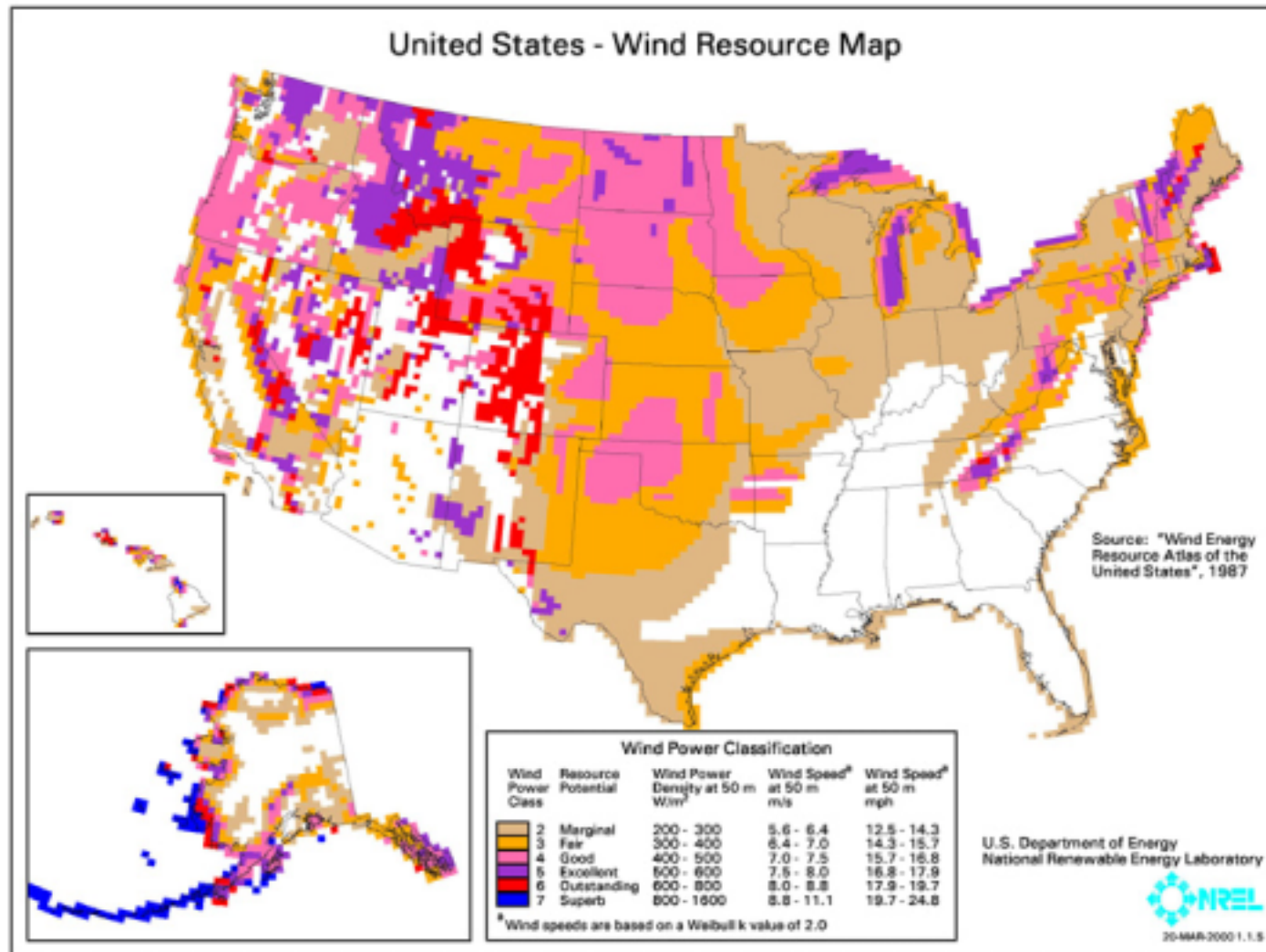


Southeast Resources

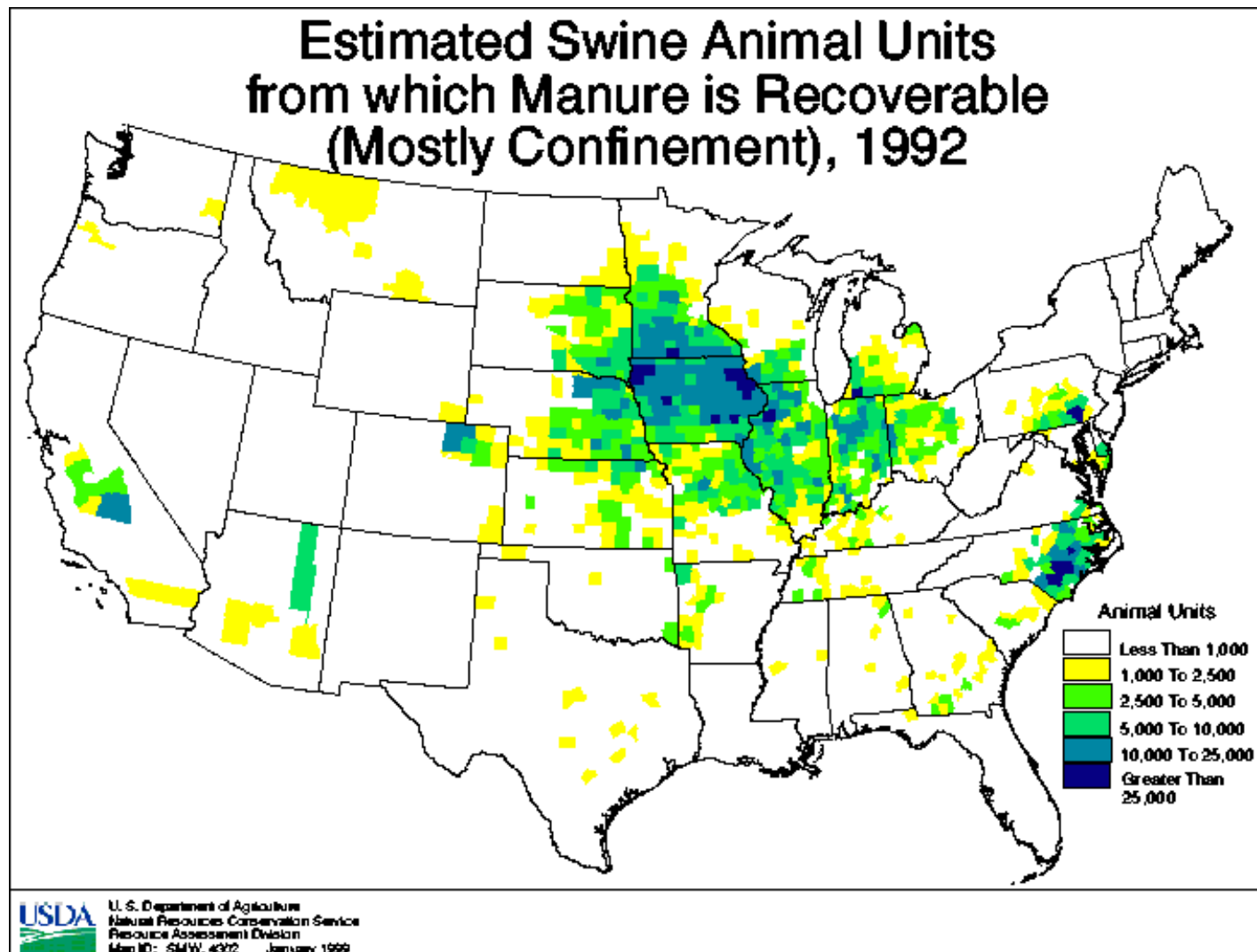
U.S. Renewable Energy Resources



Wind Resources



Swine Waste

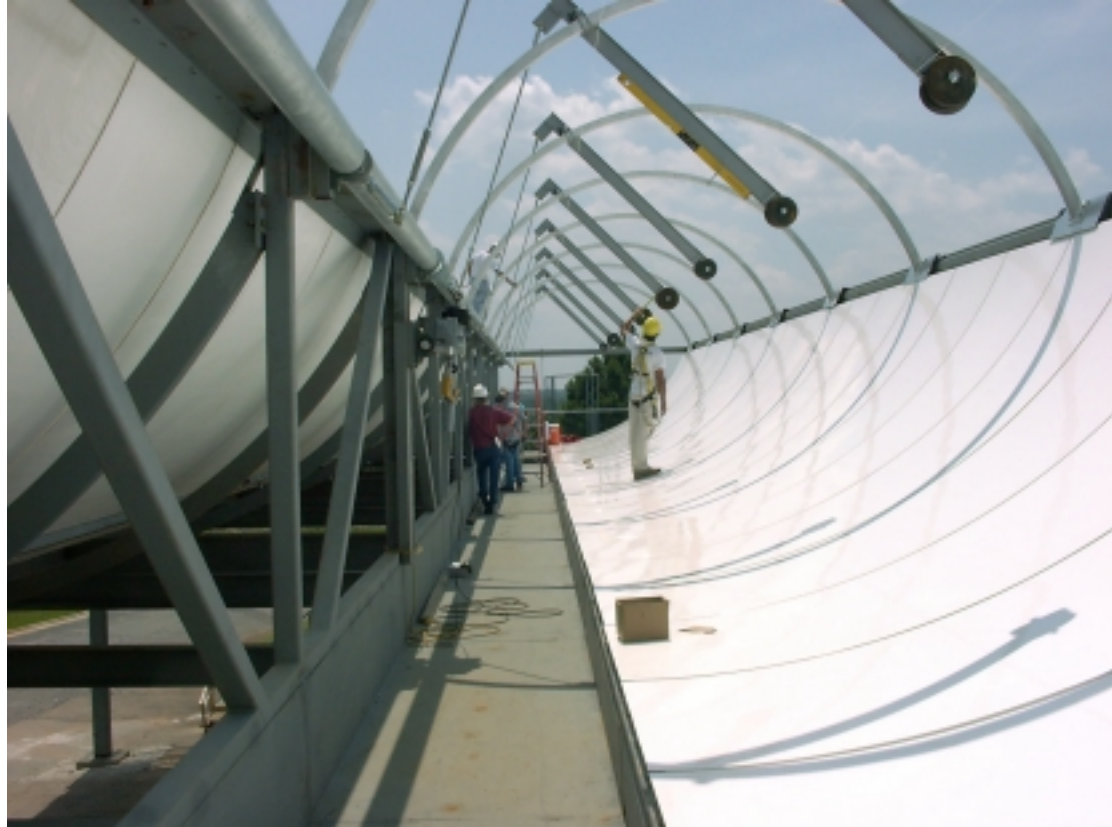


Incentives for Fed Facilities

- Renewable Portfolio Standards
- Green Pricing
- Public Benefits Fund



- 150 kW EPA Facility in RTP



- Duke Solar Power Roof